from swinging disks were always greater than from an outflow-apparatus. Experiments in which sulphate of manganese solution was let flow from a capillary tube placed between magnetic poles, and others in which the capillary tube, of flint glass coated with shellac, was brought into the field of a condenser (the liquid being sulphide of carbon), showed no alteration of the coefficient of friction.—On the solubility of salt mixtures, by F. Rüdorff. Of the pairs of salts examined, some were found to be forced from their common solutions when an excess of one or the other salt acted on these, but in other cases only those pairs of salts were forced out which separate from the common solution either in double salts or in mixed crystals.—On the theory of fluorescence, by E. Lommel. He answers some objections of Herr Wüllner to his theory.—Spectral photometric researches on some photographic sensitisers. He finds the sensitising colouring-matters divisible into: (1) those which gradually absorb the spectrum from the violet onwards, and are like the ordinary photographic; (2) those which have a regular absorptive action over great parts of the spectrum from the violet, but photographically show a maximum of sensitisation in the yellow; and (3) those which show an absorption band in the spectrum and a local increase of sensibility to light thereabouts (coincidence not exact).—Correction of new formulæ, by W. Wernicke.—Remarks on Herr Melde's acoustic experimental researches, by A. Else.—Alteration of the influence machine, by E. Lommel. He gets a spark of 12 cm.—On an inaccuracy of the theory of the gold-leaf electroscope, by T. Häbler.

Proceedings of the Boston Society of Natural History, vol. xxiii., part 1.—Mr. Bouvé contributes notes on gems, especially the garnet, hiddenite (an unnamed gem of a light yellow colour, a representative of the mineral spodumene, of which hiddenite is a green variety), and others.—Dr. S. Kneeland read a paper, illustrated by the stereopticon, on the subsidence theory of earthquakes as evidenced by the Ischian catastrophes of 1881 and 1883.—Prof Crosby has a long paper on the relations of the conglomerate and slate in the Boston Basin; Mr. Bouvé on the genesis of the Boston Basin and its rock formations; Messrs. Dickerman and Wadsworth on an olivine-bearing diabase from St. George, Maine; Prof. Shaler on the origin of kames, a kind of gravel deposit, also known as Eskers, and often called in America, Indian ridges. He supposes that at the close of the glacial period the re-elevation of the land must have been accomplished with very great suddenness.—Finally, Prof. Hyatt contributes a lengthy paper on the larval theory of the origin of cellular tissues.

SOCIETIES AND ACADEMIES

PARIS

Academy of Sciences, September 7.—M. Bouley, President, in the chair.—Researches on isomerism in the aromatic series: Action of the alkalis on the phenols of mixed function, by M. Berthelot.—Studies on the mode of action of the subnitrate of bismuth in the staunching of sores, by MM. Gosselin and Hérat.—Note on the fluorescence of some rare earths, by M. Lecoq de Boisbaudran. The author arrives at conclusions differing in several respects from those of Mr. Crookes, but reserves for the present an exposition of the grounds which induce him to infer that yttria is not the efficient cause of the fluorescence.—On apparent anæsthesis and retarded sensations in hysterical, epileptic, and other nervous subjects, by M. V. Revillont.—Letter announcing the discovery of a new star in the nebula of Andromeda, by M. Lajoie.—Note on the changes recently observed in the nebula of Andromeda, by M. G. Bigourdan.—Observations of Brooks's new comet and of the new planet, 250, made at the Paris Observatory (equatorial of the west tower), by M. G. Bigourdan.—Table of the chief elements of the ten regular polyhedric figures, one illustration, by M. Em. Barbier.—A new map of the solar spectrum, by M. L. Thollion. This work, which has occupied four years of incessant labour at the Observatory of Nice, comprises the whole of the solar spectrum between A and *b*—that is, about one-third of the prismatic spectrum. It is over ten metres long and includes 3200 lines, or double the number contained in Angström's Atlas. In the preparation of this plan the author's aim has chiefly been to determine as far as possible the present state of the solar spectrum, to serve as a starting-point for future observation. The physicist will by its means be able to record subsequent changes in the spectrum with the same certainty that the astronomer determines the changes taking place in stellar regions.—Account of the "Anemogene," an apparatus invented for generating aërial currents analogous to those of the terrestrial atmosphere, by Mgr. Rougerie, Bishop of Pamier. This instrument takes the form of a miniature globe, which, by rotating around its axis in the air, is made to produce by its mechanical action currents resembling those observed on the greater part of the oceanic basins. The currents are indicated by vanes placed at intervals of 5°, like the compass-cards of the thirty-two winds prepared for the French navy by M. Brault. A list is given of all the trade winds, ascending and descending currents, and other normal atmospheric phenomena reproduced with more or less accuracy by this apparatus.—On the period of latent excitation of some smooth muscles in the invertebrates, by M. Henry de Varigny.—On the so-called "vidian" nerves in birds, by M. F. Rochas.—On the anatomy and vital functions of *Truncatella truncatula*, by M. A. Vayssière.—On the marine annelids of the Bay of Algiers, by M. C. Viguier.—On the anatomical structure of the Ascidians (genera Saracenia, Darlingtomia, and Nepenthes), by MM. Edouard Heckel and Jules Chareyre.—Note on the black rot recently introduced from the United States into the vineyards of Hérault, by MM. P. Viala and L. Ravaz.—On the earthquake-shock felt at Orleans on August 16, by M. E. Renou.—M. H. Gadeau de Kervill announced that he had obtained a hybrid from a tame pigeon and a ring-dove, presenting in a modified form nearly all the special features of both parental types.

September 14.—M. Bouley, President, in the chair.—Dis courses pronounced at the obsequies of the late M. Bouquet on September 11, by MM. J. Bertrand and Hermite.—On the fluorescence of some rare earths, continued, by M. Lecoq de Boisbaudran.—Description of the model of a new integraph serving to trace an integral curve $(y = \int f(x)\,dx + C)$, any curve $(y = f(x))$ being given, one illustration, by MM. D. Napoli and Abdank-Abakanowicz. This integraph is capable of numerous applications, and may render great services to the engineer's art. It traces mechanically and with great precision the funicular curves or polygons which play so large a part in the problems of statics. Such problems as the centre of gravity, momenta of inertia, elastic curves and the like, are solved with great rapidity and accuracy.—On submarine countermines, by M. A. Trève.—On the new star in the nebula of Andromeda. Observations of Brooks' comet made at the Observatory of Paris (equatorial of the West Tower), by M. G. Bigourdan.—Numerical tables intended to facilitate the calculation of the ephemerides of the minor planets, by MM. O. Callandreau and L. Fabry.—On the mixed haloid and other derivatives of methylene, by M. Louis Henry.—On the fermentation of bread-stuffs, by M. Aimé Girard. From numerous researches instituted to determine the true character of the phenomenon by which the dough is changed into bread, the author concludes that the transformation is the result of alcoholic fermentation.—Researches on the morphology and anatomy of ferns, by M. P. Lachmann.—Disposition of the artesian waters in the Wed Rir' and throughout the Lower Sahara in general, by M. G. Rolland. In this paper the author sums up the results of observations continued for a period of six years on the underground supplies in the vast depression of the Shott Melrir in Algeria and Tunis.—Application of the laws of thermo-chemistry to geological phenomena: ores of manganese, by M. Dieulafait.—Note on a therapeutic operation, to which the name of "dielectrolysis" has been given, by M. A. Broudel.—Trigonometric study of a pyramid whose base is the triangle of Pythagoras, by M. G. Petrowitsch. The sides of the base being respectively related as the number 3, 4, 5, the faces of the pyramid satisfy the relation $3^3 + 4^3 + 5^3 = 6^3$, the number 6 being the measure of the right-angled triangle of the base.

BERLIN

Physiological Society, July 17.—In consequence of a doubt expressed on a former occasion in the Society, Dr. H. Virchow had examined more minutely the eye of the frog, and had come to the conviction that it possessed a beautiful ciliary muscle with long fibres, which, as in the case of all other animals, composed the posterior and outer part of the ciliary body. The ciliary body, as was known, filled out the corner arising from the choroid, which closely adjoined the sclerotic, curving itself round to the iris at the point where the sclerotic passed into the cornea, and, besides the muscle, consisted of

the pigmentary fold and a network of fibres, the ligamentum pectinatum iridis, which Dr. Virchow had searchingly investigated in a large number of animals. This network of fibres was so little developed in man as hardly to merit any consideration there. In other classes of animals, however, it attained a very remarkable development. The speaker gave a more detailed description of the course of the fibrous lines of the sclerotic and cornea, now they were developed more anteriorly, reaching far into the iris. By means of numerous diagrams and several preparations these anatomical relations were illustrated in greater detail. In regard to the physiological significance of this network of fibres the speaker was of opinion that they performed a mechanical function, but he dissented from the assumption put forth by some authors that the ligamentum pectinatum was the tendon of the ciliary muscle. Such an assumption was at variance with the fact that in the case of man, whose eye possessed powerful ciliary muscles, the ligamentum pectinatum was but weakly developed, whereas in other animals with a very weak ciliary muscle it was strongly developed. The fibres of the ligamentum pectinatum might operate as antagonists to the ciliary muscles in those cases in which they were especially directed posteriorly. In such cases, on the other hand, in which the fibres were developed more to the anterior side and passed into the iris, they would probably serve as antagonists to the musculus sphincter pupillæ. It was still more probable that by their radiation towards the membrana limitans they afforded support and hold to the fibres of the ligamentum suspensorium of the lens, establishing themselves at the other side of this membrane. This relation was brought very close by the course of the fibres, particularly in the case of the anthropoids.—Herr Aronsohn made some additions to his former communications on the physiology of the sense of smell. The most minimal quantities of clove oil and bromine, which dissolved in 0·6 per cent. of common salt solutions, he was yet able to smell distinctly, tallied very well with the most minute quantities which Valentin had found perceptible by the sense of smell in the air. By electrical stimulation of the olfactory nerve he had also been able to call forth distinct sensations of smell in some other trustworthy persons. The physiological common salt solution of the temperature of 40° C. he had previously found to be entirely indifferent to the olfactory nerves. Were a part of the common salt replaced by other salts, then, according to the nature of the salt, different, mostly somewhat large, quantities of the salt (osmodic equivalents) had to be taken in order to form an indifferent solution. These osmodic equivalents Herr Aronsohn had now exactly determined for a series of salts. Finally, in order to demonstrate that there were special fibres in the olfactories for special smells, he had hebetated his own sense of smell for a certain quality of smells, that, namely, of sulphuret of ammonium, and had convinced himself that, though, indeed, no longer able to perceive this smell, he was yet very well able to smell ethereal oils.—Dr. Benda spoke of a series of preparations of sensory and motory nerve-endings which he had exhibited in the Demonstrating Hall. They were prepared according to a new process recommended by Dr. Meys. The process consisted in adding arsenic acid to a chloride of gold and potassium. By means of this reagent the nerve-endings were made very beautifully visible, but in this way the epithelia were destroyed, and in order to preserve these likewise, Dr. Benda had further added to the fluid either chromic acid or alcohol. The exhibited preparations showed very clearly that the medullary motory nerves ended in Kühne's terminal plates, besides which in one case a marrowless, and certainly sensory, nerve-fibre, ending in a bifurcated ramification, could be distinctly traced. Marrowless fibres ended in an umbellate form, each single fibre on the muscle passing into a button-like swelling. These fibres, Dr. Benda held to be motory. There were further shown the nerve-endings in the papillæ of the tongue, in the Paccinian corpuscles, in the cornea, and in the skin of the neck.—Dr. Kossel spoke of some important chemical relations of the cell nucleus, of that constituent of it, namely, which morphologists denoted as chromatine, and chemists as nucleine. As products of decomposition of the nucleine he had formerly obtained three nitrogenous bases: xanthine, hypoxanthine, and guanine. Quite recently he had obtained, though, to be sure, only in very small quantities, from the nucleine, a fourth base, namely, adenine, discovered by him some time ago in the glands of the abdomen. After he had prepared 3 g. of this substance, he treated it with nitrous acid, and received as a product of the decomposition of adenine, hypoxanthine. When he treated guanine in the same manner he received xanthine. It was therefore probable that the first products of decomposition of the nucleine were adenine and guanine, and that from these, first hypoxanthine and then xanthine were formed. The chemical relations of these four bases were best rendered evident by their chemical formulæ :—

Adenine ...	$= C_5H_5N_5$	Guanine ...	$= C_5H_5N_5O$
Hypoxanthine	$= C_5H_4N_4O$	Xanthine ...	$= C_5H_4N_4O_2$

All the four bases stood in intimate relation to prussic acid, CHN, which by the action of caustic alkali was obtained from them in very large quantities, while other albuminous bodies under similar treatment yielded very little prussic acid, or none at all. It was doubtless of great importance that nuclein stood in such intimate relation to cyanogen. What part, however, the cyanogen bodies played in the cell nucleus was as yet unknown.

VIENNA

Imperial Academy of Sciences, June 5.—On the determination of the halogens of organic bodies, by K. Zulkowsky.—On the products of reduction of the nitro-azo-compounds and on azo-nitrolic acids, by T. V. Janovsky.—On the action of rock-crystal in the magnetic field, by T. Tumlirz.—On the distribution of heat on the earth's surface, by R. Spitaler.—Mycological researches, by H. Zukal.—Ideas on the prophylaxis and therapeutics of cholera, by L. Kastner.—On the fossil chalk-elements of the Alcyonidæ and Holothuridæ and other recent forms, by Ph. Pocta.—On the temperature of the Austrian alpine regions, by T. Hann.—Determination of the trajectory of the Comet VIII. 1884, by S. Oppenheim.

June 11.—On the behaviour of liquid and gaseous bodies under the greatest variations of atmospheric pressure, by C. Puschl.—On the electrical resistance of copper at the lowest temperature, by S. Wroblewski.—On the formation and dissolution of white blood-corpuscles (a contribution to the theory of leukæmia), by M. Loewit.—On the basalt of Kollnitz (in the Lavant valley, Carinthia), and on its vitreous cordierite-enclosures, by K. Prohaska.—Report on the experiments on the use of boiling oxygen, nitrogen, carbon oxide, and atmospheric air as refrigeratives, by K. Olscewski.—On the destruction of tartaric acid at higher temperatures under the presence of glycerine, by K. Tavanovitsch.

June 18.—Experiments on the chemical action of light, by T. M. Eder.—On the volumetric determination of phenol by bromine, by K. Weinreb and C. Bondi.—On the anatomy of Tyroglyphidæ, by A. Nalepa.—On the decomposition of didymium into its elements, by C. Auer von Welsbach.

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